

**WATER & SEWER
COMMISSION**

January 15, 2019

Mr. Douglas Koopman
U. S. Environmental Protection Agency
5 Post Office Sq. Suite 100 OEP-04-4
Boston, MA 02109-3912

Ms. Samantha Couture
U. S. Environmental Protection Agency
5 Post Office Sq. Suite 100 OEP-04-4
Boston, MA 02109-3912

Mr. Thomas Mahin
Mass DEP NERO; Bureau of Resource Protection
205 B Lowell St.
Wilmington, MA 01887

RE: Combined Sewer Overflow (CSO) Reports
Modified Consent Decree Paragraph 13a-d

Dear Sir or Madam:

As required by the Third Modified Consent Decree (Paragraphs 13a-d), the Lynn Water and Sewer Commission (LWSC) must submit annual reports by January 15 summarizing the impacts of existing sewer overflows. The required reports are as follows:

1. Overflow Inspection Annual Reports (Paragraph 13a)

Until such time as all discharges from the CSO have been eliminated, each tide gate and CSO regulator structure shall be inspected at least once every three months and after each rain event that activates that CSO. The report shall describe each inspection; adjustment, repair or any other maintenance work performed on tide gates and combined sewer overflow regulator structures during the previous twelve months. The report shall indicate which structures were inspected; the date and time of each inspection; the condition of each structure at the time of inspection; the nature of any repairs performed; the date(s) on which the repairs were performed; the nature of any repairs planned but not yet performed; the reason such repairs have not yet been performed; and the anticipated schedule for such repairs.

2. Infiltration / Inflow Annual Report (Paragraph 13b)

This report shall describe each action taken to minimize infiltration / inflow into the sewer system during the previous twelve months.

3. Combined Sewer Overflow Activity Annual Report (Paragraph 13c)

This report shall describe each CSO discharge, which occurred during the previous twelve months. The report shall include the following information for each discharge event at each individual CSO outfall; (i) the date (s), time and estimated duration of the discharge; (ii) the estimated volume of the discharge; (iii) the National Weather Service precipitation data from the nearest gauge measuring precipitation at daily intervals and from the nearest gauge measuring precipitation at hourly intervals for the period of time relevant to the discharge; and (iv) a calculation of the cumulative precipitation.

4. Stacey Brook Culvert Report (Paragraph 13d)

This report shall describe the results of continuing periodic examination of Stacey Brook Culvert to prevent any future illegal connections from Lynn.

If you have any questions or require additional information, please do not hesitate to contact me at (781) 596-2400 ext. 202.

Sincerely,

A handwritten signature in black ink, appearing to read "Anthony J. Marino, P.E.", with a stylized, cursive script.

Anthony J. Marino, P.E.
Chief Engineer

CC:

Kevin Brander, Mass DEP
Michael Wagner, USEPA
Anita Johnson, Esq., Asst. US Attorney
Chief, Environmental Enforcement Section
Andrew Goldberg, Assistant Attorney General

LYNN WATER AND SEWER COMMISSION

MONTHLY OVERFLOW INSPECTIONS

2018

(Paragraph 13a)

JANUARY 2018

INSPECTION LOCATION

COMMENTS

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: January 15, 2018
Time: 10:35 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: January 15, 2018
Time: 10:45 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: January 15, 2018
Time: 11:00 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: January 24, 2018
Time: 9:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: January 24, 2018
Time: 9:45 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: January 24, 2018
Time: 10:00 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

FEBRUARY 2018

No Overflows

MARCH 2018

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: March 5, 2018
Time: 9:35 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: March 5, 2018
Time: 9:45 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: March 5, 2018
Time: 10:00 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

APRIL 2018

INSPECTION LOCATION

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: April 17, 2018
Time: 10:00 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: April 17, 2018
Time: 10:10 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: April 17, 2018
Time: 10:25 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

COMMENTS

APRIL 2018 (continued)
INSPECTION LOCATION

COMMENTS

Summer St Overflow
(N.P.D.S. 003)

Date Inspected: April 26, 2018
Time: 10:20 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: April 26, 2018
Time: 10:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: April 26, 2018
Time: 10:45 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: April 30, 2018
Time: 9:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: April 30, 2018
Time: 9:45 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: April 30, 2018
Time: 10:00 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

MAY 2018

INSPECTION LOCATION

Summer St. Overflow
(N.P.D.E.S. 003)

COMMENTS

Date Inspected: May 16, 2018
Time: 9:10 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: May 16, 2018
Time: 9:25 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: May 16, 2018
Time: 9:35am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

JUNE 2018

INSPECTION LOCATION

Summer St. Overflow
(N.P.D.E.S. 003)

COMMENTS

Date Inspected: June 05, 2018
Time: 9:45 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: June 05, 2018
Time: 10:00 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: June 05, 2018
Time: 10:15 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

JUNE 2018 (Continued)
INSPECTION LOCATION

COMMENTS

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: June 26, 2018
Time: 8:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: June 26, 2018
Time: 8:40 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: June 26, 2018
Time: 8:55 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: June 29, 2018
Time: 9:00 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: June 29, 2018
Time: 9:15 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: June 29, 2018
Time: 9:30 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

JULY 2018

INSPECTION LOCATION

COMMENTS

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: July 18, 2018
Time: 8:15 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: July 18, 2018
Time: 8:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: July 18, 2018
Time: 8:40 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: July 27, 2018
Time: 9:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: July 27, 2018
Time: 9:40 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

AUGUST 2018

INSPECTION LOCATION

Summer St. Overflow
(N.P.D.E.S. 003)

COMMENTS

Date Inspected: August 6, 2018
Time: 11:15 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: August 16, 2018
Time: 8:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: August 16, 2018
Time: 8:45 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: August 16, 2018
Time: 8:55 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

Sanderson Ave. Overflow
and King's Beach
(N.P.D.E.S. 006)

Date Inspected: August 16, 2018
Time: 9:10 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Groveland Street Overflow
(N.P.D.E.S. 006a)

Date Inspected: August 16, 2018
Time: 9:20 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: August 23, 2018
Time: 10:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

AUGUST 2018 (Continued)
INSPECTION LOCATION

Broad St. Overflow
(N.P.D.E.S. 005)

COMMENTS

Date Inspected: August 23, 2018
Time: 10:45 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

SEPTEMBER 2018
INSPECTION LOCATION

Summer St. Overflow
(N.P.D.E.S. 003)

COMMENTS

Date Inspected: Sept. 12, 2018
Time: 11:00 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: Sept. 12, 2018
Time: 11:15 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: Sept. 19, 2018
Time: 9:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: Sept. 19, 2018
Time: 9:45 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: Sept. 19, 2018
Time: 10:00 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

SEPTEMBER 2018 (Continued)
INSPECTION LOCATION

COMMENTS

Sanderson Ave. Overflow
and King's Beach
(N.P.D.E.S. 006)

Date Inspected: Sept. 19, 2018
Time: 10:10 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Groveland Street Overflow
(N.P.D.E.S. 006a)

Date Inspected: Sept. 19, 2018
Time: 10:25 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: Sept. 26, 2018
Time: 11:00 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: Sept. 26, 2018
Time: 11:15 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: Sept. 26, 2018
Time: 11:25 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

OCTOBER 2018

INSPECTION LOCATION

Summer St. Overflow
(N.P.D.E.S. 003)

COMMENTS

Date Inspected: October 27, 2018
Time: 12:30 pm
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: October 27, 2018
Time: 12:45 pm
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: October 29, 2018
Time: 10:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: October 29, 2018
Time: 10:40 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

NOVEMBER 2018

INSPECTION LOCATION

Summer St. Overflow
(N.P.D.E.S. 003)

COMMENTS

Date Inspected: November 4, 2018
Time: 9:00 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: November 4, 2018
Time: 9:15 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

NOVEMBER 2018 (Continued)
INSPECTION LOCATION

COMMENTS

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: November 4, 2018
Time: 9:25 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: November 7, 2018
Time: 9:00 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: November 12, 2018
Time: 11:00 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: November 12, 2018
Time: 11:15 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: November 12, 2018
Time: 11:25 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: November 15, 2018
Time: 10:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

NOVEMBER 2018 (Continued)
INSPECTION LOCATION

COMMENTS

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: November 15, 2018
Time: 10:45 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: November 19, 2018
Time: 8:00 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: November 19, 2018
Time: 8:15 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: November 19, 2018
Time: 8:35 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: November 28, 2018
Time: 10:30 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Market St. Overflow
(N.P.D.E.S. 004)

Date Inspected: November 28, 2018
Time: 10:45 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: November 28, 2018
Time: 10:55 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

DECEMBER 2018

INSPECTION LOCATION

Summer St. Overflow
(N.P.D.E.S. 003)

COMMENTS

Date Inspected: December 3, 2018
Time: 10:10 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Summer St. Overflow
(N.P.D.E.S. 003)

Date Inspected: December 17, 2018
Time: 9:15 am
Condition: Good
Repairs Performed: None Required
Date: N/A
Repairs Planned: None
Schedule for Repairs: None

Broad St. Overflow
(N.P.D.E.S. 005)

Date Inspected: December 17, 2018
Time: 9:30 am
Condition: Good
Repairs Performed: None
Date: N/A
Repairs Planned: None Required
Schedule for Repairs: None

Tide Gate Inspections 2018

(Paragraph 13a)

INSPECTION LOCATION

COMMENTS

Market St. Overflow
(N.P.D.E.S.)

Tide gate installation was
completed on July 15, 1992

Broad St. Overflow
(N.P.D.E.S. 005)

Tide gate installation was
completed on July 15, 1992

Market St. Overflow Tide gate

Dates Inspected: 3/30/2018,
6/15/2018, 8/28/2018 & 11/9/2018
Condition: OK
(N.P.D.E.S. 004)

Condition: OK

Maintenance Performed:
opened/closed gate, cleaned seats
Repairs Planned: none
Schedule for Repairs: none
Repairs Performed: none

Broad St. Overflow Tide gate

Dates Inspected: 3/30/2018,
6/15/2018, 8/28/2018 & 11/9/2018
Condition: OK
Maintenance Performed:
opened/closed gate, cleaned seats
Repairs Planned: none
Schedule for Repairs: none
Repairs Performed: none

(N.P.D.E.S. 005)

LYNN WATER AND SEWER COMMISSION INFILTRATION/INFLOW (I/I) ANNUAL REPORT FOR 2018 (Paragraph 13b)

- LWSC rules and regulations include language stating that private inflow is prohibited.
- In April of 2004 LWSC commissioned engineering consultant Camp Dresser & McKee to conduct a comprehensive city wide door to door survey to identify private inflow sources. The survey identified one hundred eighty four (184) potential sources of private inflow to the sanitary sewer system in areas of the City of Lynn where storm sewerage for the conveyance private inflow was accessible. Using the results of this survey the LWSC conducted public outreach via mailings (see attached property owner letter) to owners of homes and/or businesses with confirmed inflow sources to educate them about the prohibition of private inflow and inform them about LWSC's Private Inflow Removal Program.
- As of October 2007 LWSC has confirmed and removed one hundred fourteen (114) or 62% of the potential sources, through the completion of two (2) Private Inflow Removal contracts awarded to Irvine & Sons Plumbing Co. of Lynn, MA for the removal of flat roof, driveway, yard, and basement drains, as well as an "as needed" contract with Torri Gutters of Lynn, MA to remove roof leader (downspout) connections from the LWSC sewer system.
- LWSC continues to minimize infiltration by using and requiring the use of PVC pipe for new sewer construction and side opening (sidewinder) sewer manhole covers, in the city of Lynn.
- The LWSC Sewer Department continues to respond to sewer backup complaints/emergencies and provide regular maintenance of the sewer system in the city of Lynn which includes the use of LWSC contractor National Water Main of Canton, MA to investigate and identify sections of the systems for repair/replacement, or lining to eliminate infiltration.
- To comply with Paragraph 18 of the Third Modified Consent Decree (TMCD) and 314 CMR 12.04 the LWSC Board of Commissioners (Commission) voted to adopt a program to identify and remove sources of I/I and a dollar value of \$1.16 per gallon, times four of the estimated design flow to be charged to developers who propose to discharge greater than 15,000 gallons of sanitary sewage per day to the LWSC sewer system at the December 12, 2016 Commission meeting.
- In October of 2017 LWSC assigned a task order to its engineering consultant Weston & Sampson Engineers to prepare a city wide I/I reduction program to be implemented for compliance with the TMCD.
- In December 2018, after discussion with DEP and EPA, Weston & Sampson submitted the Flow Metering Program report and Sewer System Rehabilitation Prioritization, in compliance with the TMCD and 314 CMR 12.00 (see attached).

December 28, 2018

Kevin Brander, PE
Section Chief
Wastewater Management Section
DEP/NERO
205B Lowell Street
Wilmington, MA 01887

Re: Flow Metering Program and Sewer System Evaluation and Rehabilitation Prioritization

Dear Mr. Brander:

In accordance with our agreement with the Commission dated February 16, 2018, Weston & Sampson is pleased to submit our report for Flow Metering Program and Sewer System Rehabilitation Prioritization. This report presents our findings for flow monitoring performed in the separate sewer system, including: analysis of flow meter data, groundwater data, tidal influence; review of previous I/I investigations; and sewer system rehabilitation prioritization. The analysis was performed in accordance with the *DEP Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Survey* (DEP Guidelines).

PROJECT BACKGROUND

In accordance with the Third Modified Consent Decree (issued on May 4, 2017) the Lynn Water and Sewer Commission (LWSC) performed flow metering and analysis of the separate sewer system, tributary to CSO-003 and CSO-006. The purpose of the flow analysis was to quantify inflow/infiltration that contributes to the CSO activations and identify whether sewer flows are subject to tidal influence. The results of this study were used to prioritize the evaluation and rehabilitation of the separate sewer system.

The separate sewer system was divided into 14-meter areas. Meter Areas 1 – 3 are directly tributary to CSO-003, which discharges during certain wet weather events to the Saugus River, and Meter Areas 4 – 7 are tributary to the interceptor immediately downstream of CSO-003. Meter Areas 8 – 14 are tributary to CSO-006, which discharges rarely during certain wet weather events to the outfall at King's Beach. The Meter Areas are indicated on the Flow Metering Project Map (Project Map), included in Appendix A.

LWSC previously performed I/I investigations in the separate sewer system tributary to CSO-003 and CSO-006 between 1991 and 1999. Weston & Sampson reviewed previous investigation data provided by LWSC, including the following reports for investigation work performed in the project area:

- Inflow/Infiltration Investigation Summary and Sewer System Rehabilitation Recommendations, Camp Dresser & McKee Inc., October 1991
- I/I – SSES Study, HTC Services Corporation, Spring 1995
- Summer & Cottage Streets Combined Sewer Investigation Project Draft Preliminary Design Report, Camp Dresser & McKee, November 1997
- Western Interceptor Collection Sewers Sewer System Evaluation Survey (SSES) and Infiltration/Inflow (I/I) Sewer Rehabilitation Report, Camp Dresser & McKee, May 1998
- Summer & Cottage Streets Combined Sewer Separation Project Inflow Investigation Report, Camp Dresser & McKee, January 1999

LWSC completed five (5) private inflow removal projects on the east side sewers, tributary to CSO-006, between 2002 and 2007. These projects removed a total 125 roof leaders, basement/driveway/roof/yard drains, catch basins, and sump pumps. Sewer separation work has also been completed in this area.

GROUNDWATER MONITORING

To monitor groundwater levels during the study period, four (4) groundwater wells (GW-100, GW-200, GW-300, and GW-400) were installed by Crawford Services, LLC. GW-100 was installed in Meter Area 1; GW-200 was installed in Meter Area 2; GW-300 was installed in Meter Area 12; and GW-400 was installed in Meter Area 8. Solinst pressure transducers monitored groundwater levels in five (5) minute increments for the duration of the project. The locations of these groundwater wells are indicated on the Project Map. Groundwater level graphs are included as Appendix B.

FLOW MONITORING

Flow monitoring was conducted by Flow Assessment Services between March 3, 2018 and May 31, 2018. The study area is comprised of 14 meter areas which include approximately 582,465 linear feet of sewer. Area velocity meters were installed at each location and recorded data in five (5) minute intervals. The flow meter locations are indicated on the Project Map. A flow schematic showing how each sub-area is hydraulically connected is included in Appendix C, Flow Diagram.

Each flow meter sub-area contained between 14,681 and 94,536 linear feet of sewer pipe, ranging from four (4) to 54-inches in diameter. The Pipe Summary for each Meter Area is included in Table 1, Meter Area Pipe Summary.

Weston & Sampson used two (2) rain gauges, which collected rainfall data in five (5) minute intervals. The rain gauges included a temporary gauge installed at the water pump station on Great Woods Road and a LWSC owned rain gauge located at the Sanderson Avenue Pump Station. The flow meter and rain gauge locations are indicated on the Project Map.

The following rainfall events occurred during the monitoring period:

Date	Total Rain (in)	Peak Hour Intensity (in/hr)
March 7, 2018	1.51	0.22
April 15, 2018	2.02	0.25
April 25, 2018	1.8	0.20
May 15, 2018	0.8	0.38

Hydrographs were plotted to examine flow meter performance, data trends, and response to wet weather events. Hydrographs display the changes in flow, depth, and velocity, as well as total rainfall. Flow meter hydrographs are included in Appendix D.

The flow metering data was used to calculate base infiltration and the projected peak inflow rate for the 1-year, 6-hour storm event for each meter area, in accordance with the DEP Guidelines.

CSO Activations

Flow data for the two (2) CSO locations in the project area were provided by LWSC, through their metering subcontractor ADS Environmental Services. CSO-003 is located off Summer Street, upstream of Meter 1, and discharges to the Saugus River. CSO-006 is located on Sanderson Avenue, upstream of Meter 8, and discharges to King's Beach. During the metering period, CSO-003 activated during the April 15 and 25, 2018 storm events. CSO-006 did not activate during the metering period. The following CSO activations occurred during the metering period:

Date	Total Rain (in)	Peak Hour Intensity (in/hr)	CSO-003 (MG)	CSO-006 (MG)
March 7, 2018	1.51	0.22	0.00	0.00
April 15, 2018	2.02	0.25	1.20	0.00
April 25, 2018	1.8	0.20	0.53	0.00
May 15, 2018	0.8	0.38	0.00	0.00

Infiltration

Infiltration is groundwater that enters the sewer system through sources such as broken pipes, offset joints and defective manholes. Infiltration is quantified by measuring the lowest flow reading that occurs during dry weather conditions between the hours of 12:00 a.m. and 6:00 a.m. This period represents a time of minimum sanitary flow, and therefore, any remaining flow may be attributed to infiltration. For this analysis, Weston & Sampson considered 88% of the nighttime minimum flow as infiltration. This assumption is based on study area being a predominantly residential area with insignificant contributions from commercial or industrial facilities with 24-hour discharges.

Peak infiltration rate is defined as the average of minimum flow rates observed during high groundwater conditions during a dry weather period. The highest base infiltration rates were observed in Meter Area 6, 13,292 gallons per day per inch-mile (GPDIM), and in Meter Area 7, 12,861 GPDIM. However, Weston & Sampson has low confidence in these results for the following reasons:

Meter Area 6 includes the General Electric Groundwater Remediation Pump Station located at 40 Federal Street and Old Neighborhood meat processing plant located at 37 Waterhill Street. Discharges to the sewer system from these locations have been estimated by LWSC to be as much as 150,000 gallons per day. Based on the unknown time of discharge and discharge rate, Weston & Sampson has low confidence in the base infiltration results since discharges from these facilities may occur between 12:00 AM and 6:00 AM.

Meter Area 7 receives water volumes from back-flushing operations at the LWSC Water Treatment Plant. The hydrographs indicate daily elevated flows between 3:00 AM and 8:00 AM, 10:30 AM and 3:00 PM, and 6:30 PM and 9:30 PM, which are assumed to be caused by the treatment plant operations. Each spike in flow lasts for an average of 4.5 hours. Based on the discharge from the treatment plant during overnight hours, Weston & Sampson low confidence in the base infiltration results.

The DEP Guidelines suggest performing additional infiltration investigation in sub-areas having greater than 4,000 GPDIM of infiltration. Nine (9) of the 14 Meter Areas exceed this threshold, including Meters 3, 4, 5, 6, 7, 8, 10, 12, and 14. The infiltration results are summarized in Table 2, Infiltration Analysis.

Inflow

Inflow is rainwater that is discharged into the sanitary sewer system from sources such as catch basins, roof leaders, driveway drains, holes in manhole covers and other direct or indirect inlets. Inflow is quantified by comparing sanitary sewer flow metered during a rain event to sanitary sewer flow metered during a dry-weather period at a similar time. Comparing flows during the same day group (weekday or weekend) and time is necessary to ensure that observed variations in metered flow are due to elevated flow levels caused by inflow rather than normal diurnal fluctuations. Inflow rates can also be affected by prior storm events; therefore, evaluating storm events with no precipitation in the prior three days generally yield the best results.

Based on DEP Guidelines, inflow rates were projected for each Meter Area for the 1-year, 6-hour (0.87 in/hr) storm event peak (design storm). The projected flow during the design storm is extrapolated from the Q (peak flow) versus I (peak rainfall intensity) plot. The Q vs I plot for each meter is assembled by plotting the peak flow versus the peak rainfall intensity for each storm event (see Appendix E for Q vs I plots). The fourth storm during the metering period, occurring on May 15, 2018 was removed from the analysis because it was a high intensity short

duration storm and not consistent with the other storm events. A best-fit line is then plotted from the origin to the peak intensity of 0.87 in/hour and the projected flow rate. Each meter area was then ranked using the projected inflow during the design storm. Meter Area 8 had the highest projected inflow of 28.88 million gallons per day (MGD) and Meter 12 had the lowest projected inflow of 1.7 MGD. The inflow analysis results by Meter Area, are included in Table 3, Inflow Analysis.

Weston & Sampson has low confidence in the design storm inflow rate (2.67 mgd) at Meter 1 because it is downstream of CSO-003. CSO-003 activated during the April 15 and April 25 storm events. During these events CSO-003 had a peak flow rate of 4.345 mgd and 3.181 mgd respectively. While the overflow was active, velocity at Meter 1 dropped to zero, indicating that the system downstream was surcharged. Therefore, Weston & Sampson believes that the calculated inflow rates at Meter 1 under-represent actual flow rates. Inflow rates at Meter 1 are much higher.

Tidal Influence

Weston & Sampson analyzed the tidal influence on the separate sewer system in Meter Area 1, which is adjacent to the Saugus River, and Meter Area 8, which is adjacent to King's Beach. We reviewed groundwater data from Groundwater monitoring wells GW-100 (Meter Area 1), GW-400 (Meter Area 8), and NOAA tide charts to determine whether the groundwater level is influenced by the tide. NOAA tide data for Boston (Station ID: 8443970) was used for this analysis. Review of the data showed no evidence of tidal influence at GW-100 and minimal influence at GW-400. Groundwater readings at GW-400 showed an average groundwater level increase of less than 0.2 feet during high tide. Hydrographs at Meter 1 and Meter 8 did not display increased flow rates during high tide. Weston & Sampson concludes that there is no discernable tidal influence on the separate sewer system in Meter Areas 1 – 14. Graphs comparing groundwater and sea level at GW-100 and GW-400 are included in Appendix F.

SEWER SYSTEM EVALUATION AND REHABILITATION PRIORITIZATION

The Sewer System Evaluation and Rehabilitation Program prioritizes the evaluation and repair of the separate sewer collection system assets to reduce CSO activations, remove infiltration and inflow (I/I), and improve system performance. As part of the program, available sewer system data was evaluated and a multi-year program was developed to meet the requirements of 314 CMR 12.00 and the community's wastewater collection system goals.

The primary goals of the program are to reduce CSO activations, minimize collection system infiltration & inflow (I/I), and address structural defects. It is a 9-area program that includes evaluation, design, and construction components for each project area within the 18-year program.

Sewer System Prioritization

The Sewer System Capital Improvement Program was prioritized based on activations at CSO-003 and the results of the metering program. The meter areas were ranked for inflow based on the projected peak inflow during the 1-year six (6) hour storm event. They were also ranked for infiltration based on gallons per day per inch-mile (GPDIM).

Program Duration

Weston & Sampson selected a 18-year Sewer System Evaluation and Rehabilitation Program for the LWSC's 582,465 linear feet of separate sanitary sewer. The duration is based on alternating years of sewer system investigation and design/construction. The program includes GIS mapping updates; sewer system evaluation; design of rehabilitations; construction and construction services, and pre and post construction flow evaluation.

Project Area Selection

Since inflow is the primary cause of overflows at CSO-003, inflow investigation and removal were prioritized before targeting infiltration. CSO-003 was the only overflow to activate during the metering period, therefore investigation,

design, and construction of cost-effective inflow removal in Meter Areas 1 – 7 were selected for the first project in the program. Inflow investigation, including smoke testing, dye testing and building inspections, was completed in Meter Areas 1-7 as part of the Summer & Cottage Street Combined Sewer Separation Project Inflow Investigation Project (1998). The program identified 103 catch basins as direct (56), indirect (17), or suspect (30) sources of public inflow and 417 sources of private inflow. Project 1 will utilize the results of the 1998 inflow investigation to design cost-effective inflow removal repairs in separate sewers tributary to CSO-003.

As detailed in the November 31, 2007 letter from LWSC to DEP regarding LWSC NPDES Permit No. MA 0100552 – Infiltration and Inflow Control Plan, sewer separation and inflow investigation and removal in the system tributary to CSO-006 is complete. As part of the sewer separation project, approximately 10,000 building inspections were performed, identifying 382 confirmed private inflow sources. Over the course of four (4) private inflow removal contracts, 190 cost-effective inflow sources were removed from the separate sewer system. Based on the previous inflow investigation and removal work performed in sewers tributary to CSO-006, additional inflow investigation will not be performed in Meter Areas 8 – 14.

Infiltration investigation and rehabilitation will begin with project areas tributary to CSO-003. Projects 2, 3, and 4 will complete all investigation and rehabilitation of sewers tributary to CSO-003 within an 8-year period. Subsequent projects on the east side, tributary to CSO-006, were split into project areas averaging 54,000 linear feet and are prioritized based on infiltration rates. The flow metering analysis determined that Meter Areas 9, 11, and 13 had infiltration rates below 4,000 gpdin, and therefore were not included in the program for further investigation and rehabilitation.

The Sewer System Evaluation and Rehabilitation Program map is included as Appendix G.

As the program progresses LWSC may want to adjust the order or size of the projects based on available funding, or to coincide with other projects. For example, LWSC may wish to prioritize investigations to be completed in advance of water main improvement or paving projects or refocus efforts in areas with IDDE problems. The format of the program will make program revisions a straightforward process.

Program Schedule

Each project will include evaluation, design, and construction components. In general, the projects will include the following tasks:

- Dye Testing, Survey, and Preliminary Inflow Removal Design: Project 1 (Meter Areas 1 – 7)
 - Field Investigation (Summer)
 - Dye Testing
 - Dye Flooding
 - Data Evaluation (Summer/Fall)
 - Analysis of field data
 - GIS mapping updates and linking
 - Letter report
 - Design of Rehabilitations
 - Contract Bid and Award
 - Construction and Construction Services
- Sewer System Evaluation Survey (SSES): Projects 2-9
 - Field Investigation (Spring)
 - Manhole inspection
 - Television inspection
 - Flow isolation
 - Data Evaluation (Summer/Fall)
 - Analysis of field data
 - Database development

- Cost-effective analysis
- GIS mapping updates and linking
- Letter report
- Design of Rehabilitations
- Contract Bid and Award
- Construction and Construction Services
- Post Construction Flow Evaluation

The Separate Sewer System Evaluation and Rehabilitation Program will begin in summer 2019 and will be completed in fall 2036. A detailed project schedule is included as Appendix H.

Program Map and Database Development

Weston & Sampson will use the LWSC's GIS base map to create a project map for each area of the program. Mapping features and attributes will be updated based on actual field conditions during each field investigation project. In addition, television inspection, flow isolation, and manhole inspection data collected during field investigations will be entered into an Access database. The database will be integrated with the GIS.

Information collected and incorporated into the database will create a comprehensive inventory of the LWSC's sewer infrastructure. Each year the inventory will be more accurate and complete.

CONCLUSION

Based on our review of the metering results and information provided by LWSC, Weston & Sampson created a Sewer System Evaluation and Rehabilitation Program, consisting of nine (9) project areas, for LWSC's separate sewer system. The program will allow for investigation, evaluation, and rehabilitation of 417,650 linear feet of sewer infrastructure over an 18-year period, from 2019 to 2036. The program will reduce activations at CSO-003, remove infiltration and inflow, and repair sewer defects before they become more costly emergency repairs.

The Commission is currently performing a rate study to evaluate the feasibility of various levels of investment in both the combined and separated sewer systems. The study is scheduled to be complete in 2-3 months. The results of this study may affect the Commission's ability to implement these recommendations.

If you have any questions or require additional information, please contact me at (978) 532-1900 x2280.

Sincerely,

WESTON & SAMPSON ENGINEERS, INC.

12/28/2018

X 

David M. Elmer, PE
Wastewater Discipline Leader/Vice President
Signed by: David M. Elmer, PE

cc: Daniel O'Neil, PE, Executive Director (LWSC)
Anthony Marino, PE, Chief Engineer (LWSC)

LYNN WATER AND SEWER COMMISSION COMBINED SEWER OVERFLOW ACTIVITY ANNUAL REPORT FOR 2018

(Paragraph 13c)

Attached please find a copies of year to date combined sewer overflow events sheets for the 2018 calendar year provided by LWSC real time monitoring contractor ADS Environmental Services and EST Associates.

Lynn, MA**Summer Street Overflow - Site CSO-003****2018 Overflow Summary (01/01/18 - 12/31/18)**

Overflow Event	Start Date	Start Time	End Date	End Time	Discharge Volume (mg)	Peak Flow Rate 15-minute (mgd)	Total Rainfall (inches)	Peak Rainfall Intensity (inches/hour)
1	1/12/2018	22:30			0.069	3.502	0.52	0.19
			1/13/2018	20:00	2.03	7.706	1.21	0.44
2	1/23/2018	12:00	1/23/2018	17:45	0.754	5.033	1.07	0.35
3	3/2/2018	10:45			1.651	6.116	1.98	0.24
			3/3/2018	22:45	1.053	6.352	0.00	0.00
4	04/16/18	12:30	4/16/2018	23:50	1.201	5.161	1.64	0.07
5	04/25/18	17:30	4/25/2018	23:45	0.355	4.053	0.93	0.04
6	04/27/18	17:45	04/27/18	20:00	0.173	4.008	0.51	0.02
7	05/15/18	17:45	05/15/18	21:45	0.464	6.134	0.95	0.66
8	06/04/18	10:15	06/04/18	3:45	0.362	3.234	0.57	0.15
9	06/25/18	1:30	06/25/18	4:30	0.329	4.053	0.88	0.54
10	06/28/18	10:30	06/28/18	16:45	0.402	4.683	1.20	0.51

Lynn, MA**Market Street Overflow - Site CSO-004****2018 Overflow Summary (01/01/18 - 12/31/18)**

Overflow Event	Start Date	Start Time	End Date	End Time	Discharge Volume	Peak Flow Rate 15-minute	Total Rainfall	Peak Rainfall Intensity
1	1/13/2018	3:00	1/13/2018	7:15	1.851	35.070	1.21	0.44
2	1/23/2018	12:15	1/23/2018	16:00	1.59	28.79	1.07	0.35
3	3/2/2018	8:30	3/2/2018	16:45	1.481	14.8	1.98	0.24
4	04/16/18	11:45	04/16/18	19:45	1.420	17.550	1.64	0.07
5	04/25/18	17:30	04/25/18	23:50	0.370	16.920	0.93	0.04
6	04/27/18	18:00	04/27/18	18:30	0.040	3.486	0.51	0.02
7	05/15/18	18:00	05/15/18	21:45	1.655	32.940	0.95	0.66
8	06/04/18	10:30	06/04/18	13:15	0.876	10.770	0.57	0.15
9	06/25/18	1:30	06/25/18	3:45	0.045	0.673	0.88	0.54
10	06/28/18	10:45	06/28/18	12:00	0.045	0.673	0.88	0.54

Lynn, MA**Broad Street Overflow - Site CSO-005****2018 Overflow Summary (01/01/18 - 12/31/18)**

Overflow Event	Start Date	Start Time	End Date	End Time	Discharge Volume (mg)	Peak Flow Rate 15-minute (mgd)	Total Rainfall (inches)	Peak Rainfall Intensity (inches/hour)
1	1/13/2018	2:15	1/13/2018	7:15	5.424	36.330	1.21	0.44
2	1/23/2018	12:00	1/23/2018	4:00	3.317	27.79	1.07	0.35
3	03/02/18	10:45	03/02/18	10:45	5.938	31.470	1.98	0.24
4	04/16/18	13:15	04/16/18	19:45	4.284	29.920	1.64	0.07
5	04/25/18	17:30	04/25/18	18:45	1.098	30.450	0.93	0.04
6	04/27/18	17:45	04/27/18	18:30	0.593	21.170	0.51	0.02
7	05/15/18	17:45	05/15/18	20:15	2.537	35.020	0.95	0.66
8	06/04/18	10:30	06/04/18	13:00	1.467	16.300	0.57	0.15
9	06/25/18	1:30	06/25/18	3:30	1.522	21.810	0.88	0.54
10	06/28/18	10:30	06/28/18	15:30	1.918	34.860	1.20	0.51

Lynn, MA

Sanderson & Burrill Avenue Overflow - Site CSO-006

2018 Overflow Summary (01/01/18 - 12/31/18)

Overflow Event	Start Date	Start Time	End Date	End Time	Discharge Volume (mg)	Peak Flow Rate 15-minute (mgd)	Total Rainfall (inches)	Peak Rainfall Intensity (inches/hour)
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Lynn, MA

Groveland Street Overflow - Site CSO-006A

2018 Overflow Summary (01/01/18 - 12/31/18)

Overflow Event	Start Date	Start Time	End Date	End Time	Discharge Volume (mg)	Peak Flow Rate 15-minute (mgd)	Total Rainfall (inches)	Peak Rainfall Intensity (inches/hour)
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Annual Overflow Summary CSO - 003

Overflow Event	Event Start Date (mm/dd/yyyy)	Event Start Time (hh:mm)	Event End Date (mm/dd/yyyy)	Event End Time (hh:mm)	Discharge Volume (mgal)	Peak Flow Rate - 15 min. (mgd)	Total Rainfall (in)	Peak Rainfall Intensity (in/hr)
July	07/17/2018	13:00	07/17/2018	23:00	0.56	4.86	1.75	0.59
July	07/25/2018	23:00	07/26/2018	4:00	0.10	2.50	0.86	0.03
August	8/4/2018	10:00	8/4/2018	14:00	0.10	0.07	0.40	0.23
August	8/12/2018	4:00	8/12/2018	11:00	0.81	0.85	4.38	1.76
August	8/13/2018	22:00	8/13/2018	0:00	0.00	0.11	0.21	0.16
August	8/22/2018	7:00	8/22/2018	8:00	0.09	0.31	0.78	0.60
September	09/10/2018	18:00	09/11/2018	6:00	0.05	0.98	0.79	0.16
September	09/18/2018	1:00	09/18/2018	15:00	0.35	5.21	1.47	0.76
September	09/25/2018	12:00	09/26/2018	0:00	0.20	3.69	1.51	0.62
October	10/27/2018	7:00	10/27/2018	17:00	0.08	1.29	1.37	0.17
October	10/29/2018	5:00	10/29/2018	19:00	0.21	3.96	0.51	0.31
November	11/03/2018	6:45	11/03/2018	16:45	0.73	4.55	1.26	0.21
November	11/06/2018	17:15	11/06/2018	21:15	0.14	2.14	0.76	0.09
November	11/9/2018	22:45	11/10/2018	20:45	1.09	5.09	1.36	0.36
November	11/13/2018	5:45	11/14/2018	21:45	2.24	5.1	1.24	0.19
November	11/16/2018	5:00	11/17/2018	23:45	2.15	4.99	1.13	0.29
November	11/25/2018	6:45	11/25/2018	9:00	0.11	2.78	0.62	0.26
November	11/26/2018	20:30	11/28/2018	13:00	2.88	5.47	1.43	0.22
December	12/2/2019	4:00	12/2/2019	15:00	0.19	1.89	0.78	0.13
December	12/16/2019	18:00	12/17/2019	1:00	0.06	1.67	0.64	0.16

Annual Overflow Summary CSO - 004

Overflow Event	Event Start Date (mm/dd/yyyy)	Event Start Time (hh:mm)	Event End Date (mm/dd/yyyy)	Event End Time (hh:mm)	Discharge Volume (mgal)	Peak Flow Rate - 15 min. (mgd)	Total Rainfall (in)	Peak Rainfall Intensity (in/hr)
July	07/17/2018	13:00	07/17/2018	23:00	0.07	3.12	1.75	0.59
August	8/12/2018	4:00	8/12/2018	11:00	7.42	0.85	4.38	1.76
August	8/13/2018	2:00	8/13/2018	3:00	3.55	0.11	0.21	0.16
September	09/10/2018	18:00	09/11/2018	6:00	0.10	2.52	0.79	0.16
September	09/18/2018	1:00	09/18/2018	15:00	0.04	3.44	1.47	0.76
September	09/25/2018	12:00	09/26/2018	0:00	0.36	29.84	1.51	0.62
October	10/27/2018	7:00	10/27/2018	17:00	0.06	1.77	1.37	0.17
November	11/3/2018	6:15	11/03/2018	9:00	0.05	2.40	1.26	0.21
November	11/9/2018	21:15	11/10/2018	1:30	0.72	17.27	1.36	0.36
November	11/16/2018	0:30	11/16/2018	5:30	0.37	21.60	1.13	0.29
November	11/26/2018	23:45	11/27/2018	3:00	6.13	80.91	1.43	0.22
December	--	--	--	--	--	--	--	--

Annual Overflow Summary CSO - 005

Overflow Event	Event Start Date (mm/dd/yyyy)	Event Start Time (hh:mm)	Event End Date (mm/dd/yyyy)	Event End Time (hh:mm)	Discharge Volume (mgal)	Peak Flow Rate - 15 min. (mgd)	Total Rainfall (in)	Peak Rainfall Intensity (in/hr)
July	07/17/2018	13:00	07/17/2018	23:00	8.54	100.15	1.75	0.59
July	07/26/2018	15:00	07/26/2018	17:00	1.93	66.19	0.83	0.03
August	8/4/2018	10:00	8/4/2018	14:00	0.14	0.07	0.40	0.23
August	8/12/2018	4:00	8/12/2018	11:00	25.54	0.85	4.38	1.76
August	8/13/2018	2:00	8/13/2018	3:00	5.16	0.11	0.21	0.16
August	8/22/2018	7:00	8/22/2018	8:00	0.48	0.31	0.78	0.60
September	09/18/2018	1:00	09/18/2018	15:00	2.69	98.15	1.47	0.76
September	09/25/2018	12:00	09/26/2018	0:00	1.55	104.56	15.37	0.62
October	10/29/2018	5:00	10/29/2018	10:00	0.69	24.16	0.51	0.31
November	11/03/2018	6:30	11/3/2018	8:30	1.90	33.96	1.26	0.21
November	11/09/2018	22:45	11/10/2018	3:00	3.36	35.69	1.36	0.36
November	11/13/2018	7:15	11/13/2018	14:00	2.58	26.99	1.24	0.19
November	11/16/2018	5:15	11/16/2018	11:30	3.58	29.54	1.13	0.29
November	11/25/2018	6:45	11/25/2018	7:15	0.27	13.19	0.62	0.26
November	11/26/2018	21:15	11/27/2018	7:45	9.21	90.92	1.43	0.22
December	12/16/2019	18:00	12/17/2019	7:00	0.02	2.25	0.64	0.16

Annual Overflow Summary CSO - 006

Overflow Event	Event Start Date (mm/dd/yyyy)	Event Start Time (hh:mm)	Event End Date (mm/dd/yyyy)	Event End Time (hh:mm)	Discharge Volume (mgal)	Peak Flow Rate - 15 min. (mgd)	Total Rainfall (in)	Peak Rainfall Intensity (in/hr)
July	--	--	--	--	--	--	--	--
August	8/12/2018	4:00	8/12/2018	11:00	3.68	0.85	4.38	1.76
September	09/18/2018	1:00	09/18/2018	15:00	0.11	11.95	1.47	0.76
October	--	--	--	--	--	--	--	--
November	--	--	--	--	--	--	--	--
December	--	--	--	--	--	--	--	--

Annual Overflow Summary CSO - 006A

Overflow Event	Event Start Date (mm/dd/yyyy)	Event Start Time (hh:mm)	Event End Date (mm/dd/yyyy)	Event End Time (hh:mm)	Discharge Volume (mgal)	Peak Flow Rate - 15 min. (mgd)	Total Rainfall (in)	Peak Rainfall Intensity (in/hr)
July	--	--	--	--	--	--	--	--
August	8/12/2018	4:00	8/12/2018	11:00	3.33	0.85	4.38	1.76
September	09/18/2018	1:00	09/18/2018	15:00	0.01	1.19	1.47	0.76
October	--	--	--	--	--	--	--	--
November	--	--	--	--	--	--	--	--
December	--	--	--	--	--	--	--	--

[illegible]

[illegible]

[illegible]

LWSC CSO Events 2018		Outfall 003		Outfall 004		Outfall 005		Outfall 006		Outfall 006a			
DATE	OFE Related Rainfall (in)	Time Started	Time Ended	Time Started	Time Ended	Time Started	Time Ended	Time Started	Time Ended	Time Started	Time Ended		
27-Aug-2018													
28-Aug-2018													
29-Aug-2018													
30-Aug-2018													
31-Aug-2018													
AUGUST TOTAL	5.77	4		2		4		1		1			
YEAR TO DATE	19.84	15		13		16		1		1			
1-Sep-2018													
2-Sep-2018													
3-Sep-2018													
4-Sep-2018													
5-Sep-2018													
6-Sep-2018													
7-Sep-2018													
8-Sep-2018													
9-Sep-2018													
10-Sep-2018	0.63	6:00 PM		6:00 PM									
11-Sep-2018	0.79				6:00 AM								
12-Sep-2018													
13-Sep-2018													
14-Sep-2018													
15-Sep-2018													
16-Sep-2018													
17-Sep-2018													
18-Sep-2018	1.47	1:00 AM	3:00 PM	1:00 AM	3:00 PM	1:00 AM	3:00 PM	1:00 AM	3:00 PM	1:00 AM	3:00 PM		
19-Sep-2018													
20-Sep-2018													
21-Sep-2018													
22-Sep-2018													
23-Sep-2018													
24-Sep-2018													
25-Sep-2018	1.37	12:00 PM		12:00 PM		12:00 PM							
26-Sep-2018	0.14		12:00 AM		12:00 AM		12:00 AM						
27-Sep-2018													
28-Sep-2018													
29-Sep-2018													
30-Sep-2018													
SEPTEMBER TOTAL	4.40	3		3		2		1		1			
YEAR TO DATE	24.24	18		16		18		2		2			
1-Oct-2018													
2-Oct-2018													
3-Oct-2018													
4-Oct-2018													
5-Oct-2018													
6-Oct-2018													
7-Oct-2018													
8-Oct-2018													
9-Oct-2018													
10-Oct-2018													
11-Oct-2018													

NOTE:
Times should be entered in 24 hr format.
e.g. 6:06 pm should be entered as 18:06
Excel makes the conversion to am/pm format

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Times should be entered in 24 hr format.
e.g. 6:06 pm should be entered as 18:06
Excel makes the conversion to am/pm format

[illegible]

LWSC C&O Events 2018		Outfall 003		Outfall 004		Outfall 005		Outfall 006		Outfall 006a									
DATE	O&E Related Rainfall (in)	Time Started	Time Ended	Time Started	Time Ended	Time Started	Time Ended	Time Started	Time Ended	Time Started	Time Ended								
30-Nov-2018																			
NOVEMBER TOTAL	7.80	7		4		6		0		0									
YEAR TO DATE	33.92	27		21		25		2		2									
1-Dec-2018																			
2-Dec-2018																			
3-Dec-2018	0.78	4:00 AM	3:00 PM																
4-Dec-2018																			
5-Dec-2018																			
6-Dec-2018																			
7-Dec-2018																			
8-Dec-2018																			
9-Dec-2018																			
10-Dec-2018																			
11-Dec-2018																			
12-Dec-2018																			
13-Dec-2018																			
14-Dec-2018																			
15-Dec-2018																			
16-Dec-2018	0.49	6:00 PM				6:00 PM													
17-Dec-2018	0.15		1:00 AM				1:00 AM												
18-Dec-2018																			
19-Dec-2018																			
20-Dec-2018																			
21-Dec-2018																			
22-Dec-2018																			
23-Dec-2018																			
24-Dec-2018																			
25-Dec-2018																			
26-Dec-2018																			
27-Dec-2018																			
28-Dec-2018																			
29-Dec-2018																			
30-Dec-2018																			
31-Dec-2018																			
DECEMBER TOTAL	1.42	2		0		1		0		0									
YEAR TO DATE	35.34	29		21		26		2		2									

NOTE: Times should be entered in 24 hr format.
e.g. 6:06 pm should be entered as 18:06
Excel makes the conversion to am/pm format

LYNN WATER AND SEWER COMMISSION STACEY BROOK CULVERT ANNUAL REPORT FOR 2018

(Paragraph 13d)

The Lynn Water and Sewer Commission will continue to periodically examine, through visual observations, if any solids and floatables are present at outfall 006.

All applicants for new service pipes are required to file a written application. Each service is permitted and inspected by a Commission representative. The applicant is also required to submit a sketch or plan showing the service connection.